

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

REMARKS

Amendments to the Claims

The following amendments are made in an earnest effort to advance prosecution of the application.

Claims 1 and 14 have been amended without prejudice and new claim 22 and 23 introduced to recite preferred embodiments of applicants' invention which are more clearly differentiated from the prior art.

Amended claim 1 specifies that the acid component of the carbon dioxide generating system is selected from the group consisting of ascorbic acid, succinic acid and mixtures (page 4, lines 29-31); that the carbonate salt is selected from the group consisting of sodium carbonate, potassium carbonate, sodium bicarbonate, potassium bicarbonate and mixtures thereof (page 5, lines 1-4); that the type and amount of the acid and carbonate salt are selected such that when the premix is mixed with water to give a final solids content of at least about 20 wt%, an aerated confectionery product is formed which, in the absence of mechanical aeration, has an overrun of at least about 30% and a pH of greater than about 5.8 (page 5, lines 19-23 and 27); and that the aerated confectionery product is an ice cream (original claim 12 and examples 1-6).

Claim 1 has also been amended to delete the limitations that the composition *does not contain calcium carbonate* and that the carbon dioxide generating system *does not contain citric acid* (now implicit in the Markush nomenclature recited in the claims). Amended claim 14 specifies that the confectionery product has a pH greater than 5.8 (page 5, line 27) and is an ice cream (original claim 12 and examples 1-6).

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

New claims 22 and 23 specify that the aerated confectionery product has a pH of greater than about 6.0 (page 5, line 27).

Claim 8 has been amended to more clearly recite the subject matter claimed. The amended claim specifies that the type and amount of the acid and carbonate salt (page 5, lines 19-20) are selected such that the aerated confectionery product formed when the premix is mixed with water to give a final solids content of at least about 20 wt%, has an overrun of at least about 70% (page 5, lines 31-32) without using mechanical methods to introduce overrun (page 5, lines 21-22).

Claims 2, 11, 12 and 18 are hereby canceled without prejudice.

Claim Rejections – 35 USC § 112

Claim 1, 2, 7-12, 14-18 and 21 were rejected under 35 USC §112, first paragraph, as failing to comply with the written description. The Examiner held that the limitations “which is not a calcium carbonate” and “the system does not contain citric acid” are not supported by the original disclosure.

Applicants have replaced the negative limitations by a positive recitation of the Markush groups that encompass both the claimed carbonate salt component(s) and the claimed acid component(s) of the carbon dioxide generating system.

Applicants submit that the amended claims are fully described in and enabled by the specification as filed and respectfully request that the §112, first paragraph rejection be reconsidered and withdrawn.

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

Claims 8, 11 and 12 were rejected under 35 USC §112, second paragraph as being indefinite. The Examiner asserted that as written the aerated product stated in claim 1 is produced if or when the premix is mixed with water, which is not a limitation of the claim.

Applicants have expanded claim 8 to specify that the type and amount of acid and carbonate salt recited in claim 1 are selected such that the aerated confectionery product formed when the premix is mixed with water to give a final solids content of at least about 20 wt% which has an overrun of at least about 70% without using mechanical methods to introduce overrun.

Applicants submit that the metes and bounds of amended claim 8 are clear and since definite and since claims 11 and 12 have been canceled, applicants respectfully request that the §112, first paragraph rejection be reconsidered and withdrawn.

Claim Rejections – 35 USC § 103

Claims 1, 2, 7-12, 14-18 and 21 were rejected under 35 USC §103(a) as being unpatentable over Nayyar et al (U.S. 5,853, 785 – hereinafter “Nayyar”) in view of Schenk (U.S. 4, 206, 244) and Kimura (JP 2001-346518). Applicants respectfully traverse this rejection.

Regarding claim 1 and 14, applicants respectfully submit that the combination of Nayyar, Schenk, and Kimura does not present a case of *prima facie* obviousness under § 103(a) at least because the combination neither teaches nor suggests a premix which includes a carbon dioxide generating composition *based solely on ascorbic acid, succinic acid or their mixtures and the recited carbonate salts* wherein the type and amount of the

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

acid and carbonate salt are selected such that when the premix is mixed with water to give a final solids content of at least about 20 wt%, an aerated confectionery product is formed which, in the absence of mechanical aeration, has an overrun of at least about 30% and a pH of greater than about 5.8; and wherein the aerated confectionery product is an ice cream.

Nayyar is directed to "a dry mix for preparing a slush beverage. When the dry mix is dissolved in water at a 15% solids level, the liquid has an onset melting point greater than -6.5°C and a viscosity of less than 10 mPas at 14.7°C. The mix contains at least 2% of water-soluble, low-viscosity hydrocolloid and preferably contains insoluble particles to function as an ice crystal nucleating agent". Abstract

Nayyar discloses that the premix may contain a carbonate or bicarbonate salt and an acid, in order to release carbon dioxide [Col 4, lines 12-14]. However, the carbon dioxide releasing system is taught by Nayyar to "*both further facilitate the development of fine grained ice crystals and to provide a pleasant, refreshing, organoleptic effect*". (Column 4, lines 6-10).

Column 3, lines 34-36 of Nayyar teaches that fruit-flavored mixes, such as lemon and grape, will typically contain an amount of food acid in order to provide the tart taste associated with these flavours. Examples 1,2,4,5 and 6 teach citric acid as the acid component.

Nayyar is silent about overrun or aeration of frozen confections, let alone that *the type and amount of the acid and carbonate salt are selected such that when the premix is mixed with water an aerated confectionery product is formed which, in the absence of mechanical aeration, has an overrun of at least about 30%*. In fact the words overrun (or over run) and aeration do not appear in the publication.

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

Nayyar is also silent regarding ascorbic acid or succinic acid or ice creams.

The Examiner argued that "although ascorbic or succinic acid is not explicitly disclosed, they are well known and commonly used in the art as food acids, as shown in the dry premix of Schenk and Kimura".

Schenk discloses a dry mix to make a *carbonated liquid yogurt* when combined with water. The mix contains powdered yogurt, an edible, solid acid and a solid metal carbonate. A preferred metal carbonate is a mixture of sodium bicarbonate and calcium carbonate. The preferred acids are organic acids such as citric acid and tartaric acid with citric acid being the most preferred acid (column 2, lines 28-30). All 18 examples taught by Schenk have a carbon dioxide generating system that includes citric acid in combination with calcium carbonate (dolomite or chalk).

Schenk further teaches that *ascorbic acid can be added to the mix in an amount of about 100 milligrams per 8 ounce serving to raise the vitamin C content of the mix and in the case of citrus flavoured mixes, improve taste.* (col 2, lines 28-31 and 35-38).

Thus, Schenk discloses that ascorbic acid can be added in small amounts for the purpose of raising the vitamin C content and improving taste in *combination* with citric acid. Schenk does not disclose that citric acid could be, let alone must be, replaced with ascorbic acid or succinic acid for the purpose of generating carbon dioxide. Schenk, like Nayyar, is silent regarding overrun.

Kimura discloses ice cream made with rose hips which naturally contain vitamin C (ascorbic acid). There is nothing about using ascorbic acid to generate carbon dioxide, let alone that the *amount of carbon dioxide generated by the combination of*

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

ascorbic acid and carbonate salt is sufficient to produce an overrun of at least 30% in the absence of mechanical aeration.

In contrast, applicants' invention is directed to a dry mix which contains a carbon dioxide generating system that includes specific acid-base pairs and a stabilizer such that when the mix contacts water, sufficient carbon dioxide is generated to form an ice cream having an overrun of at least 30% without mechanical aeration while maintaining a pH greater than 5.8.

Applicants have found that carbon dioxide generating systems based on ascorbic or succinic acid are superior to those based on citric acid for forming aerated ice creams from dry mixes because the former acids can develop sufficiently high overruns without producing a composition which is too acidic for an ice cream. These differences in behavior are demonstrated experimentally by a comparison of examples 1 and 2 with examples 3 and 4. Examples 1 and 2 contain ascorbic acid and produce high overrun and pH values greater than 5.8 when contacted with water. In contrast the dry mix compositions of example 3 and 4 which use citric acid, produce a pH lower than the 5.8 threshold (4-5.5) for a comparable overrun.

Furthermore, applicants have also shown in example 7 (Fig 1) that the pH vs. acid concentration curves of ascorbic and succinic acids have a much shallower slope in the region of pH 5 to pH 6 than citric acid. This means that small changes in acid concentration that may occur during manufacture of the dry mix do not result in large changes in pH (see page 16, lines 4-11) as with citric acid.

Applicants submit that a person of ordinary skill in the art would not have been motivated to modify Nayyar based the teachings of Schenk and Kumar to derive applicants invention and would in fact be dissuaded from doing so.

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

The purpose of the current invention is a dry mix containing an acid/carbonate system to generate sufficient gas to form an aerated ice cream product without agitation and without the pH from becoming too low for an ice cream (e.g., 5.8 or less). This is important for aerating ice creams, but not for the applications in water ices taught by Nayyar or yoghurts taught by Schenk. Since in both prior art applications there is no requirement for overrun and no issue with the pH becoming too low (both references disclose acceptable compositions having pH less than 5) there is no need to use anything other than citric acid which both references teach as the most preferred acid and to limit the overrun and pH generated by the system.

Based on the above arguments, applicants respectfully submit that it is only through hindsight that the current claims could reasonably be considered as having been obvious over the combination of Nayyar, Schenk and Kimura.

Nayyar, Shenk and Kimura are directed to very different objective technical problems from applicants' invention. Absent a disclosure of the specific elements and limitations discussed above, the combination of Nayyar, Schenk, and Kimura does not present a case of *prima facie* obviousness of claim 1 under §103(a).

Claims 8, 15 and 22 are even further removed from the combination of Nayyar, Schenk, and Kimura.

Claim 8 and 15 specifies that the type and amount of the acid and carbonate salt are selected such that the aerated confectionery product formed when the premix is mixed with water has an overrun of at least about 70% without using mechanical methods while Nayyar, Schenk and Kimura are silent regarding overrun generated by a carbon dioxide source in the absence of mechanical agitation.

Attorney Docket No.: F3347(C)
Serial No.: 10/583,231
Filed: May 17, 2007
Confirmation No.: 8228

Claim 22 and 23 specifies the type and amount of the acid and carbonate salt are selected such that the aerated confectionery product formed when the premix is mixed with water to give a final solids content of at least about 20 wt%, has a pH of greater than about 6.0. This is even further removed from the pH generated by citric acid.

In view of the foregoing amendment and remarks, applicants respectfully request that the §103(a) rejection of claims 1, 2, 7-12, 14-18 and 21 over Nayyar, Schenk and Kimura be reconsidered and withdrawn and that the application be allowed to issue.

If a telephone conversation would be of assistance, Applicant's undersigned agent invites the Examiner to telephone at the number provided.

Respectfully submitted,

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